



Alpha Magnetic Spectrometer
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Alpha Magnetic Spectrometer Weekly Reports

November 12, 2004



National Aeronautics and
Space Administration

Upcoming Events:

- SFHe Tank Technical Interchange Meeting (TIM) - November 16-18, 2004 - Winterthur, Switzerland
- AMS-02 Integration Meeting - December 7-9, 2004 - CERN (Geneva)
- Thermal Control System (TCS) Delta Critical Design Review (Δ CDR) - December 13-14, 2004 - CERN (Geneva)
- AMS General TIM - January 10-14, 2005 – KSC
- Tracker Thermal Control System (TTCS) PDR - January 2005, CDR - April 2005
- STA Vacuum Case Delivery (on dock at STADCO) - Schedule under review
- Flight Vacuum Case Delivery (on dock at STADCO) - Schedule under review
- AMS-02 Phase II Safety Review - March 2005 - JSC

Upcoming Tests:

- AMS-02 Avionics Functional Interface Test (FIT) - January 2005 – KSC
- Interface Plate Static Test - Date TBD - Location TBD
- Lower Joint Static Test - Date TBD - Location TBD
- STA Acoustic Test - Date TBD - ESTEC - Noordwijk, Netherlands (Schedule under review)
- STA Sine Sweep Test - Date TBD - INFN - Terni, Italy (Schedule under review)
- Full Assembly Modal & Static Tests - Date TBD - IABG - Munich, Germany

Status:

- ***LM AMS personnel supported a number of meetings with SEAT Program Management and NASA/JSC AMS Project Management to discuss the latest slip in the Vacuum Case (VC) delivery schedule and issues with the hardware at STADCO. The issues continue to be worked with STADCO. LMSO management is using whatever methods available to encourage STADCO to meet its obligations with respect to schedule. This includes enlisting support from other LM companies that have STADCO contracts.



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- ***The shop aid used for inspecting the VC Support Rings that was damaged in a transportation accident was re-machined to achieve the required flatness for to permit inspection. The Structural Test Article (STA) Support Rings are at the Coordinate Measuring Machine (CMM) facility for inspection in the "constrained flat" condition but not held round. This condition will generate a number of Discrepancy Reports (DRs), but it is more realistic of the flight condition.
- ***The drawings for the USS-02 Extruded Beams were submitted to LMSO Procurement to initiate the procurement activity. Estimated cost of the beams from Alcoa Engineered Products is \$120K. The beams have a 25 week lead time. Upon arrival, the beams will be supplied to Rothe Joint Venture (RJV) for final machining and incorporation into the USS-02.
- ***Tim Urban joined the LMSO AMS Team as Electronics and Avionics Integration Lead. As an indoctrination, a meeting was conducted with personnel working the electronics and avionics tasks to get acquainted with team members, roles, and responsibilities; update current status; and to discuss upcoming activities, such as the Functional Interface Test (FIT) to be conducted at KSC in January 2005. In the course of the meeting, four action items were assigned to coordinate pre-test planning for the FIT.
- A presentation on the manufacturing and assembly of the AMS-02 Unique Support Structure - 02 (USS-02) was created and presented to NASA and LMSO project management, and RJV manufacturing personnel. The presentation included an assembly sequence for the USS-02, manufacturing schedule, and current status. The presentation was well received with no major concerns.
- Twenty-five flight drawings for the Unique Support Structure (USS-02) were updated with the new border template from the Engineering Drawing Control Center (EDCC) and submitted to Checking. Four of the 25 drawings were uploaded to Engineering Drawing Review System (EDRS) for approval and release. Eleven drawings will be uploaded to EDRS by early next week. Ten drawings are pending Stress approval before uploading to EDRS.
- Twenty-seven drawings for the Vacuum Case Test Fixture (VCTF) base fixture were submitted and released through the Engineering Drawing Control Center (EDDC). These completed drawings have the old border and were released with an understanding that the drawing will be updated with the new border at some future time. This will take place prior to final release.
- Manufacturing activity on the Primary Support Stand (PSS) is continuing at RJV. LMSO engineers are monitoring the manufacturing activity closely and providing support to RJV when required.
- Work was initiated on the design of the debris shields for AMS-02 for the Transition Radiation Detector (TRD) Gas Supply System. The hyper-velocity impact analyst was contacted for consultation on the requirements for the debris shield design.
- STADCO was given the "OK" from Lockheed Martin to go ahead with the closeout weld qualification tests. Although Space Cryomagnetics Limited (SCL) has not yet agreed to the proposal for heat reduction on the backside of the weld, it was determined that the risk is minimal and that the weld schedule will be affected if SCL does not accept the LMSO proposal. STADCO was also given the "OK" to proceed with the processing of all five Conical Flanges.



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- Analysis is continuing on the assembly stress and sustained stress issue for the Vacuum Case. Preliminary results look good for the Lower Support Ring. Upper Support Ring analysis will be completed by November 18.
- Analysis was initiated on USS-02 components to help facilitate the release of the drawing package. Previous stress analysis is being reviewed to determine what drawings are currently ready for Stress approval.
- A meeting was conducted with Avionics Systems Division (EV) EEE (electrical, electronic, and electromechanical) parts and radiation testing experts to discuss testing requirements for the AMS Experiment hardware. EV personnel are to review the AMS-02 radiation testing document from the European Center for Nuclear Research (CERN) for applicability to ISS radiation testing requirements.
- The External Berthing Camera System (EBCS) installation procedures and installation drawing were reviewed and comments were submitted to the ISS Program Integration Office (OM). An EBCS is mounted on the AMS-02 Passive Payload Attach Systems to provide visual cues to the operator of the Space Station Remote Manipulator System (SSRMS) during payload berthing on the S3 Truss.
- The drawings for FIT test cables (STE-03 and STE-06) were completed and submitted for review and approval. An investigation was initiated to determine what materials are on hand for test cable builds and AMS is investigating materials trade options with other organizations.
- Revisions to the Vacuum Case ICD continue in work with an anticipated completion date of November 19. Work on the ICD was temporarily suspended to work the VC delivery schedule issues.
- Two discrepancy reports (DRs) (Documenting an Out-of-Round Hole & a Broken Drill Bit) written against VC components were closed and returned to STADCO.
- Vacuum Case Milestones

<u>Contract Deliverable</u>	<u>Due Date</u>	<u>Status</u>
Weld Fixture Complete	August 2004	
First Article Conical Flange Complete	October 2004	
STA Support Rings Complete	November 2004	(Machining complete, final inspection in work)
STA Conical Flanges Complete	November 2004	(Machining complete, metal finish in work)
Flight Support Rings Complete	November 2004	
Flight Conical Flanges Complete	November 2004	
STA Line Drill Operations Complete	November 2004	
Weld Development Complete	December 2004	(Qualification tests on hold)



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Shipping Fixture Complete	December 2004	(CDR complete)
First Article Weld Complete	December 2004	
STA Match Drill Procedure Complete	December 2004	
STA Weld Complete (for proof test @ STADCO)	December 2004	
STA Vacuum Case Delivery (on dock at STADCO)	Schedule Under Review	
Flight Vacuum Case Delivery (on dock at STADCO)	Schedule Under Review	